



Future of Nuclear Energy

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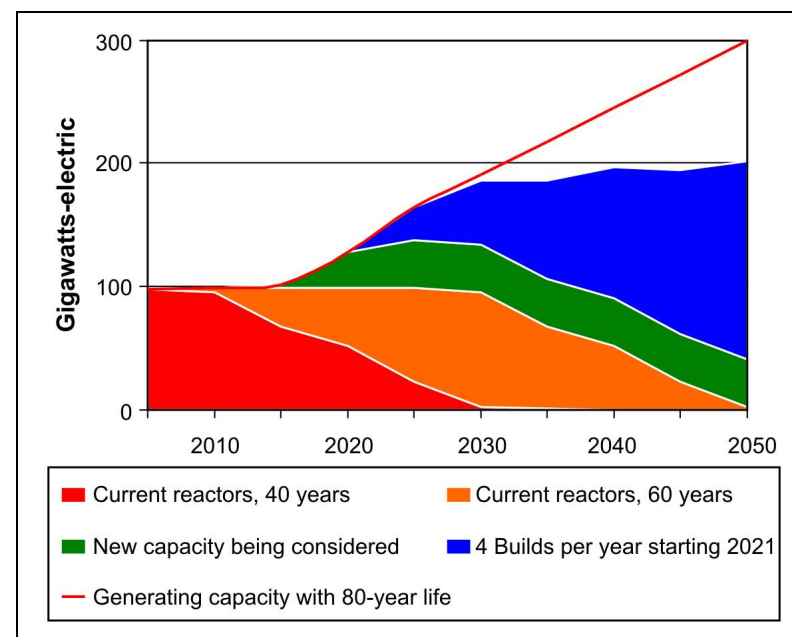


Nuclear Energy in the U.S.

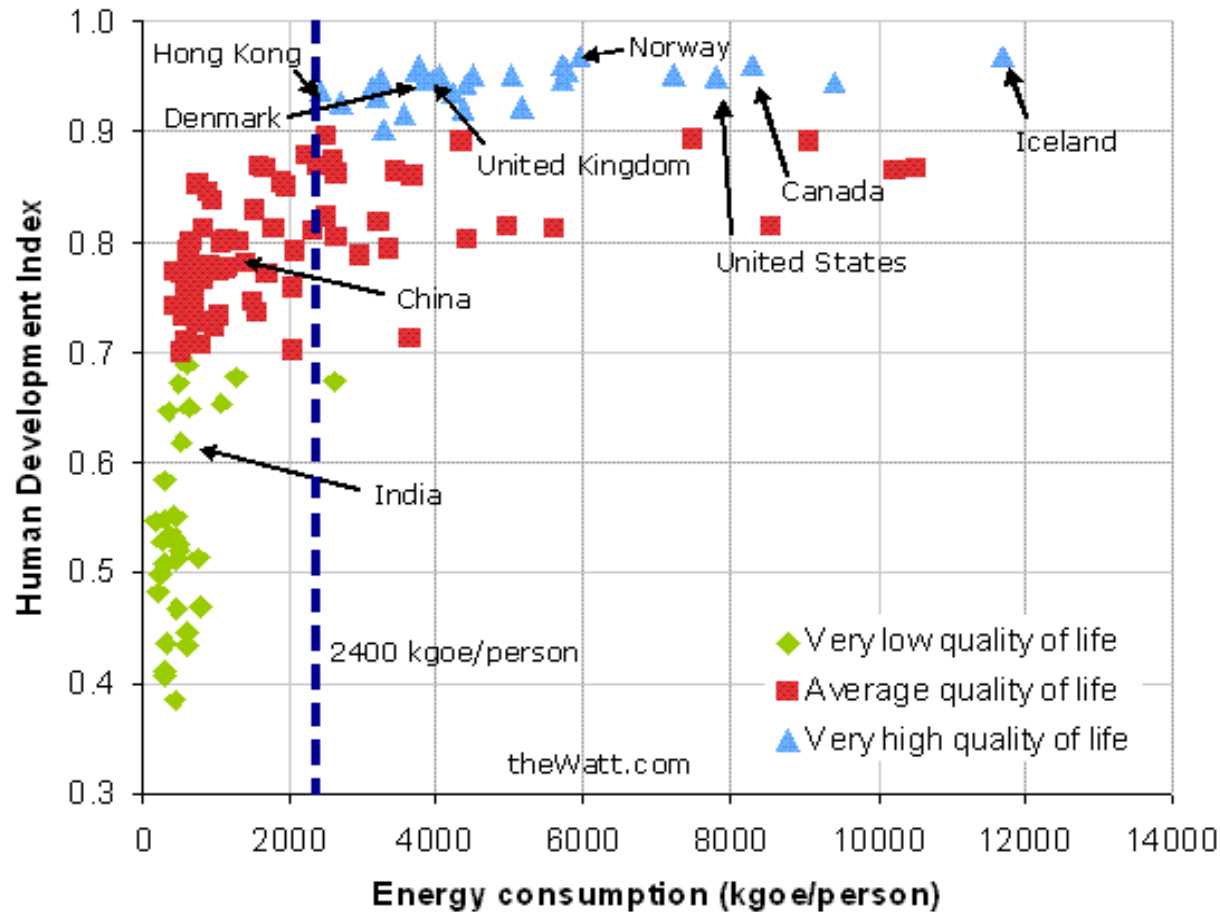


- 104 reactors in 31 states
- 4 new nuclear plants under construction
- 22 early site permits
- Providing 20% of our electricity
- 69% carbon free generation

- 71 reactors with 20 year license extensions, 32 with pending extensions
- 140 power uprates, 20 more under review. *Equivalent to about six new reactors*
- 23 commercial reactors have shut down



Nuclear Energy in the Rest of the World



There are 66 commercial plants being built world-wide and only four of those are in the U.S.

440 Reactors Worldwide (104 of those are in the U.S.)

Factors for Change

- **Increase demand for electricity — 22% increase in the U.S. by 2035**
- **Concern about carbon emissions**
- **Cost of energy and its impact on economic competitiveness**
- **Costs, risks and environmental impacts of nuclear energy and its alternatives**
 - Baseload power
 - Fukushima

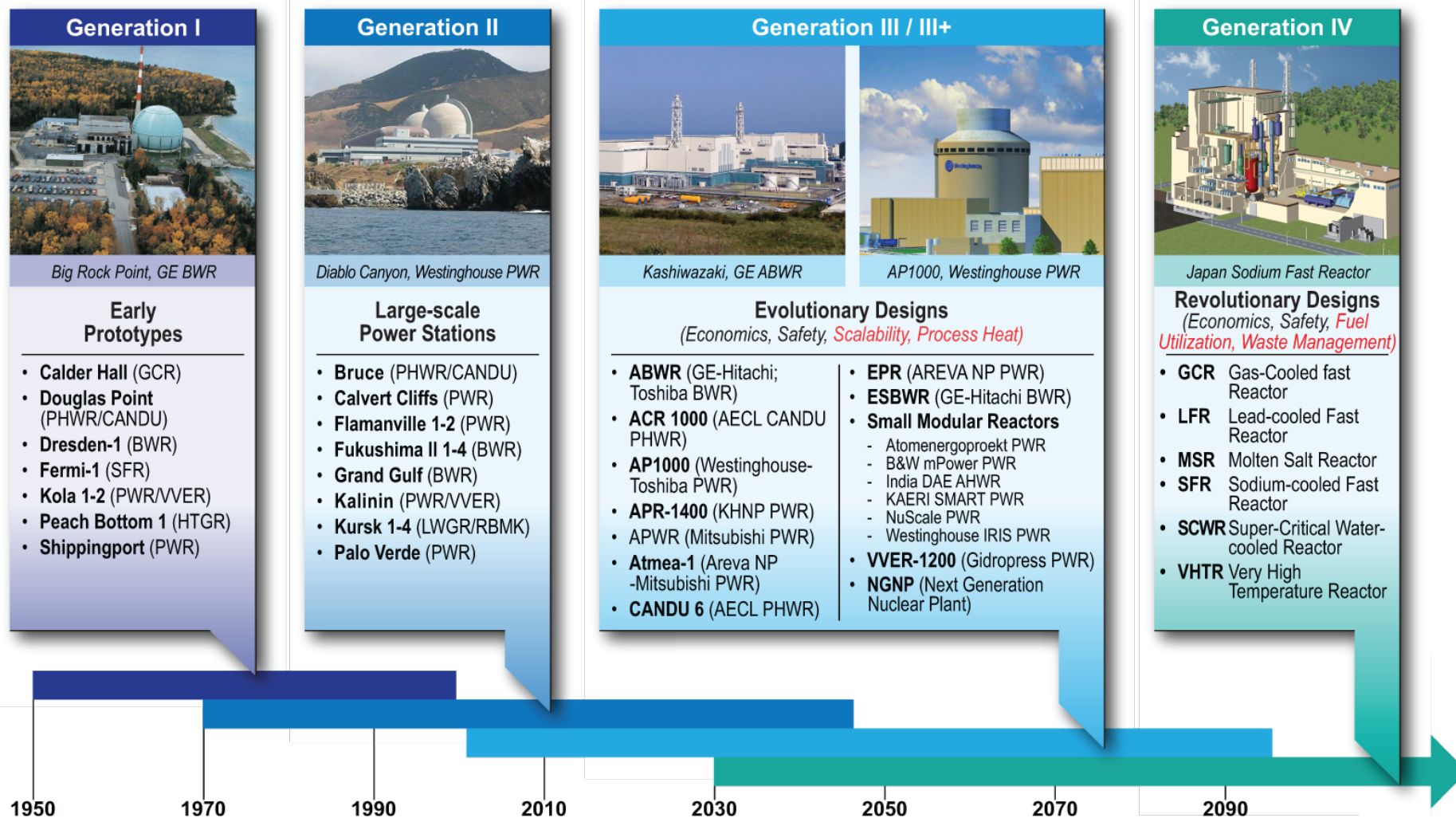


Factors for Change in the U.S.

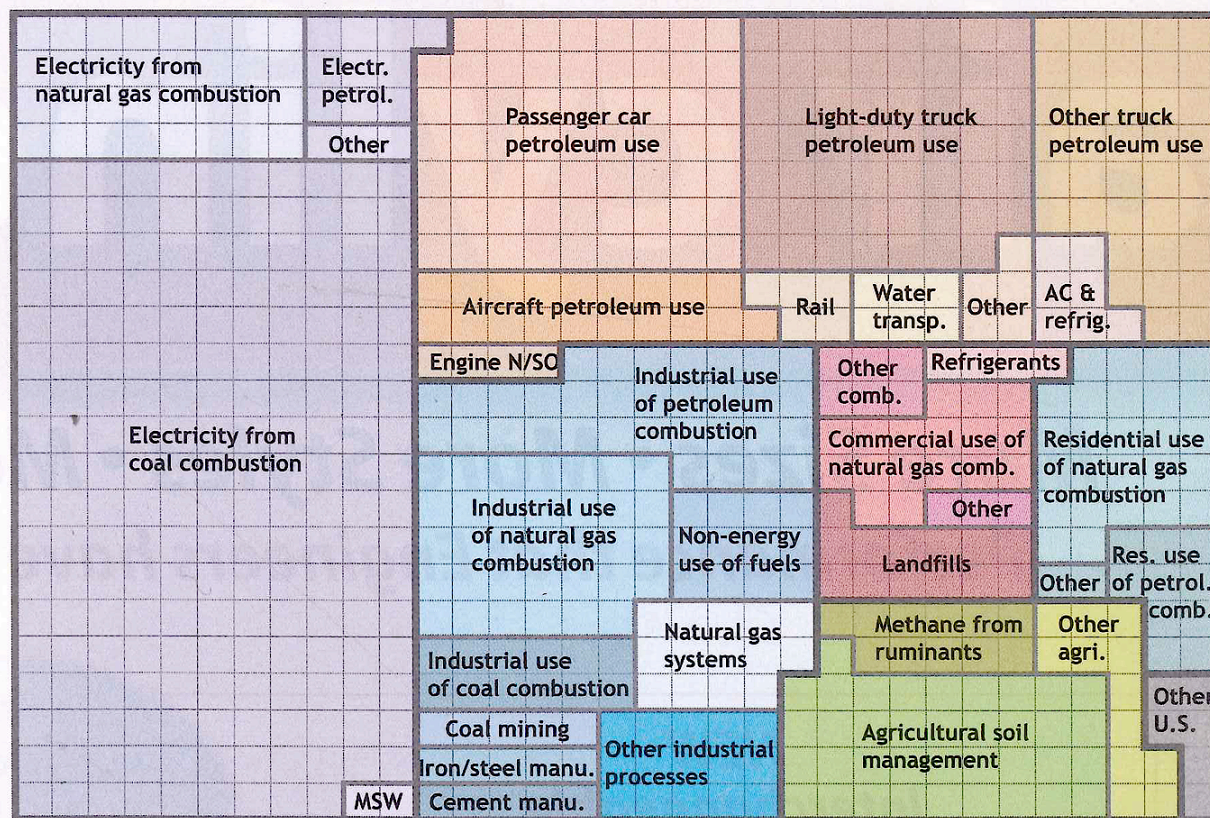
- **Helpful to Nuclear Energy**
 - 4 new plants under construction in 2 states
 - 9 license extensions approved (post Fukushima)
 - Blue Ribbon Commission may resolve the Yucca Mountain impasse
 - U.S. reactors evaluated as safe (post Fukushima)
- **Not Helpful to Nuclear Energy**
 - Low natural gas prices, anticipated very large supply
 - Financial turmoil and recession
 - Fukushima's impacts on public opinion and cost of related regulations
 - NRC uncertainty
 - No effort to put a price on CO₂ emissions
 - Lack of a long-term view
 - *Demonizing and romanticizing technology*



Reactor Technologies — Past, Present and Future

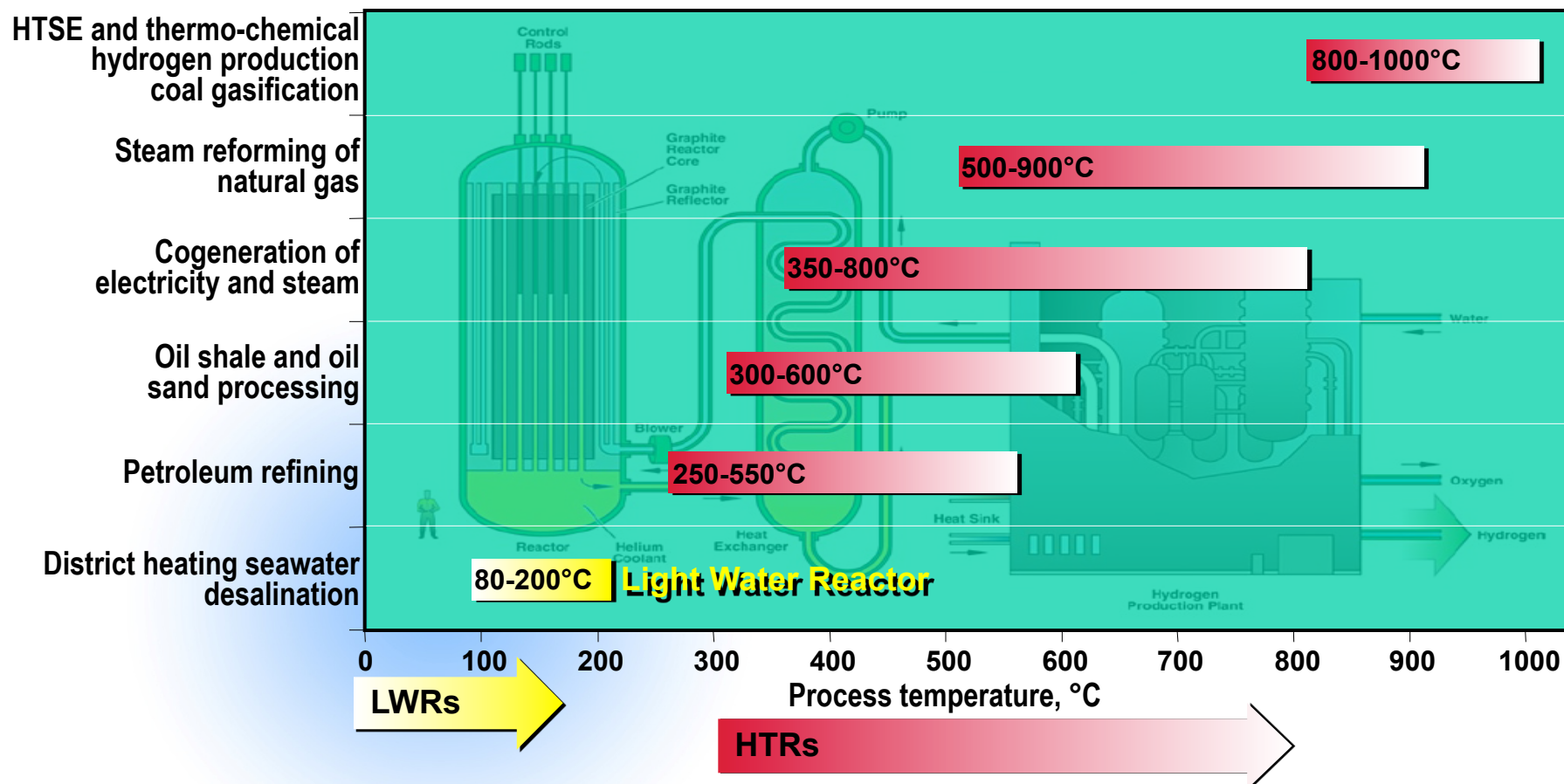


2007 Sources of Greenhouse Gas Emissions

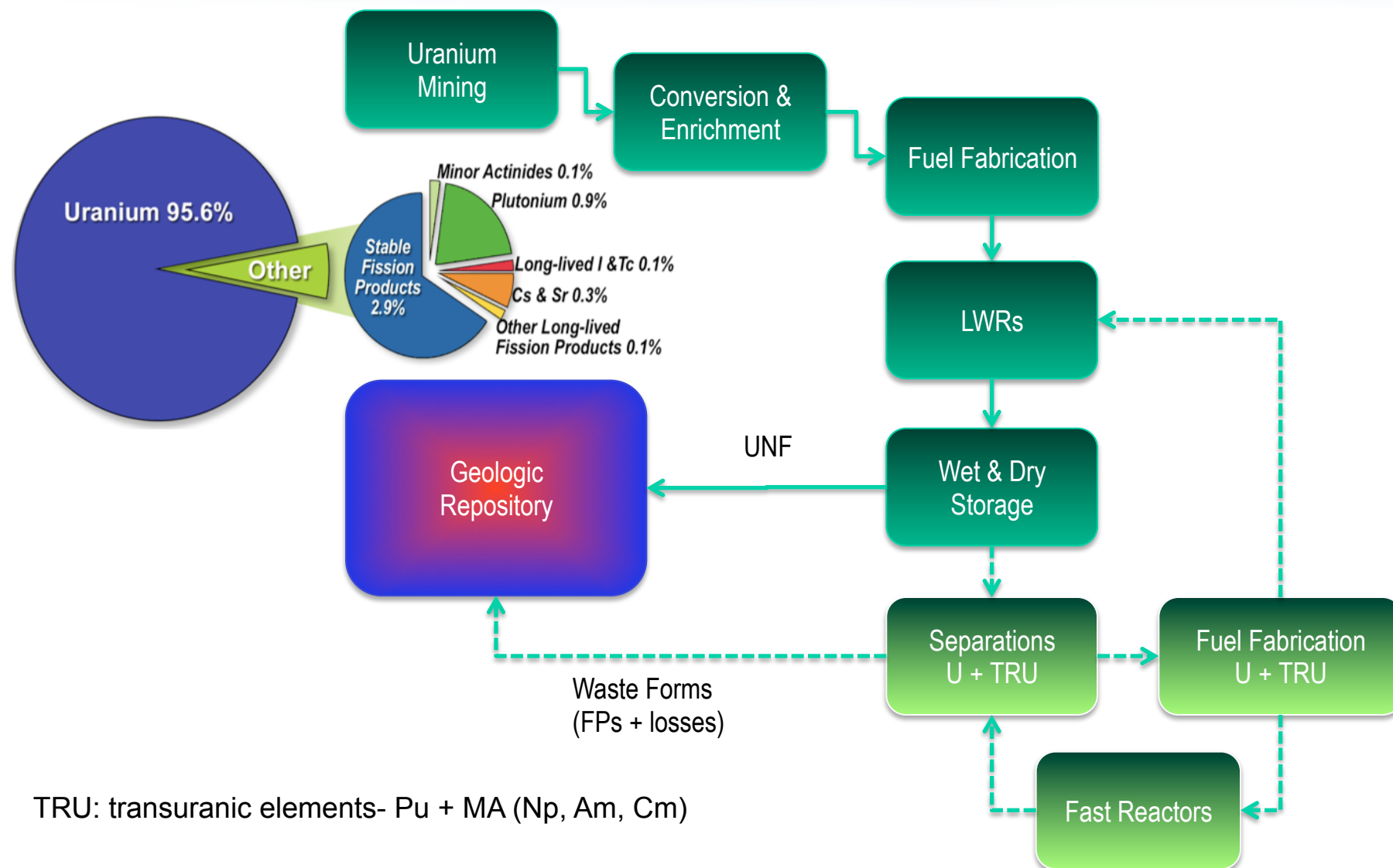


▲ Derived from a 2007 U.S. EPA report, this chart breaks down the annual U.S. emissions of greenhouse gases by source. Each of the 726 squares represents the equivalent of 10 million tons of CO₂.

Nuclear energy can reduce greenhouse gases beyond the electricity sector



Fuel Cycle Technologies





Idaho National Laboratory

The National Nuclear Laboratory